

CLAIMS

1. A circuit comprising:

at least one antenna element adapted to output first and second signals, said first and second signals having first and second polarizations respectively, said second polarization being orthogonal to said first polarization;

5 means for weighting said first and second signals with first and second weights respectively; and

a controller for providing said first and said second weights.

2. The invention of Claim 1 wherein said means for weighting includes a first module adapted to receive said first signal and provide a first weighted signal in response thereto.

3. The invention of Claim 2 wherein said first module includes:

first means for splitting said first signal into third and fourth signals;

second means for rotating the phase of said third signal to provide a phase shifted third signal; and

5 third means for applying said first weight to at least one of said third or said fourth signal.

4. The invention of Claim 3 wherein said third means includes means for applying a third weight to said third or said fourth signal.

5. The invention of Claim 4 further including means for combining said third and said fourth signals.

6. The invention of Claim 2 wherein said means for weighting includes a second module adapted to receive said second signal and provide a second weighted

signal in response thereto.

7. The invention of Claim 6 wherein said second module includes:

first means for splitting said second signal into fifth and sixth signals;

second means for rotating the phase of said fifth signal to provide a phase shifted fifth signal; and

5 third means for applying said second weight to at least one of said fifth or said sixth signal.

8. The invention of Claim 6 wherein said third means includes means for applying a third weight to said fifth or said sixth signal.

9. The invention of Claim 8 further including means for combining said fifth and said sixth signals.

10. The invention of Claim 1 wherein said controller includes a processor and software adapted for execution thereby.

11. The invention of Claim 1 further including N antennas adapted to output first and second signals, said first and second signals having first and second polarizations respectively, said second polarization being orthogonal to said first polarization.

12. The invention of Claim 11 wherein said second means includes 2N modules, each module including:

first means for splitting said first or said second signal into third and fourth signals;

5 second means for rotating the phase of said third signal to provide a phase shifted third signal;

third means for applying said first weight to at least one of said third or

said fourth signal.

13. The invention of Claim 12 wherein said third means includes means for applying a third weight to said third or said fourth signal.

14. The invention of Claim 13 further including means for combining said third and said fourth signals to provide a weighted output signal.

15. The invention of Claim 14 further including means for summing a weighted output signal provided by each of said 2N modules.

16. The invention of Claim 11 wherein each of said antennas is coupled to at least one channel.

17. The invention of Claim 16 further including means for designating one of said channels as a reference channel.

18. The invention of Claim 17 further including means for designating a second channel as a reference channel.

19. The invention of Claim 18 wherein said means for designating a second channel as a reference channel includes means for passing a baton.

20. The invention of Claim 19 wherein said means for passing the baton includes means for dithering said weights and detecting power in said first or said second signals in response thereto.

21. The invention of Claim 1 wherein said antenna is adapted to receive GPS signals.

22. A distribution network for an antenna array having N antenna elements adapted to output first and second signals, said first and second signals having first and second polarizations respectively, said second polarization being orthogonal to said first polarization, said network comprising:

5 2N modules for weighting said first and second signals, each of said modules including:

first means for splitting said first or said second signal into third and fourth signals,

second means for rotating the phase of said third signal to provide a phase shifted third signal,

10 third means for applying a first weight to said third and a second weight to said fourth signal, and

fourth means for combining said third and weighted signals to provide a module output signal; and

15 a controller for providing said weights for each module.

23. The invention of Claim 22 further including means for summing the module output signals.

24. The invention of Claim 23 wherein said controller includes a processor and software adapted for execution thereby.

25. The invention of Claim 22 wherein said antenna is adapted to receive GPS signals.

26. A method for receiving a signal comprising:

receiving a signal with an antenna and outputting first and second signals with first and second signals in response thereto, said second signal being orthogonal relative to said first signal;

5 providing a complex weighting to said first signal to provide a first weighted signal;

providing a complex weighting to said second signal to provide a second weighted signal; and

summing said first and second weighted signals.

27. A circuit comprising:

first and second antenna elements;

first and second channels coupled to said first and second antenna elements respectively; and

5 means for selecting said first or said channel as a reference channel in response to a predetermined set of operational conditions.

28. The invention of Claim 27 wherein said means for selecting includes means for passing a baton.

29. The invention of Claim 28 wherein said means for passing a baton includes means for detecting a power level of signals received by said first and said second antennas.

30. The invention of Claim 29 wherein said means for passing the baton includes means for applying weights to the signals received by said antenna elements.

31. The invention of Claim 30 wherein said means for passing the baton includes means for dithering said weights in response to said means for detecting power.

32. The invention of Claim 31 wherein said means for dithering includes means for determining step direction.

33. The invention of Claim 32 wherein said means for dithering includes means

for determining step size.

34. A method for selecting a reference channel including the steps of:
 - receiving signals using first and second antenna elements coupled to first and second channels respectively;
 - selecting said first channel as the reference channel during a first set of operational conditions and
 - selecting said second channel as the reference channel during a second set of operational conditions.